

Attorney Docket: 31583-160474

Translation of German Office Action dated 03.25.1998

IW/file # 224743

Application File Number: 197 54 891.1-31

Request for examination submitted on December 10, 1997

[x] The following cited references are mentioned for the first time in this Office Action (the numbering applies to the continued procedure):

- (1) DE 296 14 691 U1
- (2) JP 59 – 175 299 A (with abstract)
- (3) DE 92 04 734 U1

An ultrasonic converter is known from the Figure and the description in reference (1), which converter has diaphragm 1 arranged in a holder 8, 18 and a piezoelectric disk 2 that is affixed to a rear main surface of the diaphragm. The diameter of the piezoelectric disk 2 in this case is smaller than the diameter of the diaphragm. It furthermore follows from claim 6 in reference (1) that a first material (felt cushion 3 or plastic material 4) is affixed there as well to the rear main surface of diaphragm 1.

Thus, the subject matter of the present patent claim 1 differs from reference (1) only in that the diameter of the piezoelectric disk is said to be between 60% and 85% of the membrane diameter and that the first material is to be foamed. However, the presumably existing person skilled in the art can provide the first features by taking into account the desired opening angle of the sound lobe for the converter and the second feature by taking into account the requirement for a cost-effective production of the converter. These features do not show any inventive activity.

The subject matter of claim 1 thus follows so as to suggest itself from the prior art known from reference (1).

For that reason, patent claim 1 is not allowable and claims 2 to 14 are consequently also not allowable.

Claim 15 is focused on a method for producing an ultrasonic converter. However, no inventive features can be detected in this claim. Rather, the method corresponds to a

necessary sequence of assembly steps, which are predetermined by the configuration. Thus, claim 15 is also not allowable and claim 16 is consequently also not allowable.

We want to point to the abstract in reference (2), which lists the state of the technology for selecting the diameter of the piezoelectric disk in relation to the diaphragm. Finally, we also want to mention the reference (3), especially the Figure 1 with description.

Insofar as the applicant believes that the subject matter of the application still contains features or measures of importance to substantiating the patentability, the applicant is free to present detailed reasons for this opinion, along with a new main claim focused on these features, as well as dependent claims that are adapted to this new main claim.

The prospect of a patent granting cannot be held out with the presently available documents.

Examination Office for Class H 04 R
Dipl.-Ing. Süßmuth
Home phone: 3492

Enclosures:

Copies of 3 cited references (two copies)

[STAMP: GERMAN PATENT
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/s/ Ziller

(government employee)

Translation of German Office Action dated Nov. 16, 1998

Examination request submitted effective December 10, 1997

The following cited reference has first been mentioned in this Office Action (the numbering is the same for the continued procedure):

(4) DE 33 01 848 C2

With response dated October 14, 1998, the patent claims were maintained unchanged.

The additional reference (4) is mentioned as prior art. The Figure and description of this reference disclose an ultrasonic converter,

- for which a diaphragm 1 is arranged in a holder; compare (4), lines 15-18 in column 2 ("... the foam jacket ... can simultaneously be used as a means for fastening in the housing...");
- for which a piezoelectric disk 1 is affixed to a rear main surface of a diaphragm 2;
- for which the diameter of the piezoelectric disk is approximately 50% of the diameter of the diaphragm; and
- for which a first material 4 is foamed onto the rear main surface of the diaphragm.

All features of the present patent claim 1 – with the exception of the dimensioning of the piezoelectric disk diameter relative to the diaphragm – are therefore known from the reference (4).

However, a comparable dimensioning is known, for example, from reference (2).

In view of the Applicant's arguments in this response, claiming that the combination of features is inventive in the opinion of the Applicant, it is suggested that the patent claims be restricted with respect to reference (4).

Based on the present documents, the prospect of a patent granting cannot be held out.

Examination Office for class H 04 R
Dipl.-Ing. Süßmuth
Home Phone: 3492

Enclosure:

Copies of 1 cited reference (2 copies)

Issued:

/s/ Müller
(government employee)

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OFFICE – 24]